REMARKS

1. Informalities

Claim Additions. Claim 23 has been added to the application. The subject matter contained in this new claim is properly supported in the specification. In addition, no new matter is being set forth in this new claim.

2. Claim Rejections -- 35 U.S.C. § 102

Claims 1-2, 5, 21, and 22 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Schmitt, F., Barsky, B., Wen-hui Du. "An Adaptive Subdivision Method for Surface-Fitting from Sampled Data." Proceedings of the 13th Annual Conference on Computer Graphics and Interactive Techniques. Pp. 179-188. 1986 (hereinafter referred to as "Schmitt.").

In response, Applicant has amended claims 1 and 21 to reflect or recite subject matter not disclosed or taught in Schmitt. Specifically, after careful analysis of Schmitt, Applicant respectfully submits that the claims, as amended, are not anticipated by the disclosed subject matter in Schmitt. This contention is supported by the arguments below.

First, Applicant has amended the preamble of claims 1 and 21 to include the limitation that the method for modeling is confined to that of a "building structure," such as a residential dwelling or commercial building, as well as to obtaining estimations of various projects to be undertaken with respect to the building structure. Indeed, this amendment sets forth the intended focus of the present invention, namely that of modeling building structures for the purpose of obtaining or generating project estimates pertaining to construction of these types of structures.

On the other hand, Schmitt focuses on modeling *surfaces* of objects, as evidenced by the title of the publication. Albeit, Schmitt discloses a method and computer system for rendering various surfaces, even three-dimensional objects, Schmitt does not disclose or suggest the ability to create a three-dimensional model *of a building structure* for the purpose of generating estimations of various projects to be undertaken in the building structure. Indeed, nothing about modeling in three-dimensions to obtain a volumetric polyhedron that represents an actual building structure is discussed or taught in Schmitt, only that for modeling surfaces of objects.

In addition, and perhaps most significant, claims 1 and 21 of the present invention have been amended to emphasize the origin of the morphed estimation polyhedral. Specifically, claims 1 and 21 have been amended to recite the utilization of a "*non-derivational default* volumetric polyhedron" that is used in the beginning phases of the modeling and estimation functions described (emphasis added). This non-derivational default volumetric polyhedron is not dependent at all upon or derived from or based on the actual building structure itself, as is the model in Schmitt, but is rather simply a basic polyhedron that may be manipulated in various ways to finally arrive at the estimation polyhedron that is to approximate the actual building structure as closely as possible.

This method is in stark contrast to that taught and disclosed in Schmitt. Not only is Schmitt confined to teaching how to surface-fit an object, and nothing more, but Schmitt teaches how to construct a compact representation to model the surface of an object, wherein the process is dependent upon or based upon given data points of the actual object that are obtained via an automatic three-dimensional digitizing system. In other words, *the method described in Schmitt requires that the surface-fitting process*

described first be preceded by a digital dimensioning process, wherein data points are specifically extracted and/or retrieved from the object itself whose surface is to be modeled, and then input to obtain an initial rough model of the surface of the object. See Schmitt pg. 179, second paragraph. As such, the initial model before any morphing is conducted is specifically derived from the object being modeled. Once these data points are extracted, they are input into the surface-fitting system as a plurality of vertices that define a plurality of planes, wherein these *derived* vertices and planes may be manipulated to obtain a more accurate rendition of the surface of the object. As such, Schmitt discloses a modeling system that requires obtaining data points that are based on and retrieved from the actual object to be modeled before any manipulation or morphing is done. Even though, as Applicant concedes, the system disclosed in Schmitt may be used to model various three-dimensional objects, the process used to obtain that model is significantly distinct from that in the present invention.

Claims 1 and 21 have also been amended to recite or include the limitation that modeling of the building structure is achieved only in connection with an estimation software program. This limitation is evidenced by the amendment to step (a) in claims 1 and 21 reciting "an estimation program", as well as the addition of element (f) in claims 1 and 21 reciting the step of "generating a project estimate..." In other words, each of these limitations requires that the modeling of a building structure be done only in anticipation of generating various project estimates that correspond to the building structure being modeled. As such, method claims 1 and 21 are not too broad so as to encompass modeling of a building structure only, without more, but that the modeling must be specifically followed by the recited steps of generating various estimates based

on the model, wherein the steps of modeling are done within an estimation software environment.

Still further, claims 1 and 21 have been amended to clarify the step of assigning an estimation attribute to each facet existing in the estimation polyhedron. This element or limitation was not clearly set forth in the claims as previously filed or amended. According to the present amendments, each facet is assigned an estimation attribute that corresponds to a structural attribute of the particular room or chamber of the building structure which it represents. As such, each estimation attribute may also be considered a structural estimation attribute. And, according to the specification, an estimation attribute is defined as including, but not limited to, one of a wall, ceiling, floor, or other structural member, thickness, etc. See Specification pg. 8, lns. 9-16; pg. 15 ln. 20-pg. 16 ln. 6.

On the other hand, Schmitt does not disclose nor teach the assigning of estimation attributes to the various facets or planes comprising a modeled building structure, wherein these assigned attributes correspond to specific structural or physical attributes of the actual building structure. As described above, Schmitt describes and teaches a system that surface models an actual object based on a large number of *given* data points. As such, the limitations in these claims render the present invention, and particularly the system and methods claimed, much more specific in their form and application.

Claims 2, 5, and 22 have not been amended as these claims place further limitations on what is otherwise argued allowable subject matter. Therefore, Applicant respectfully submits that these claims stand in a condition for allowance.

Based on the foregoing, Applicant respectfully requests that Schmitt does not anticipate any of the claims of the present invention. As such, Applicant respectfully requests that the rejection under 35 U.S.C. § 102 be withdrawn from consideration.

3. Claim Rejections -- 35 U.S.C. § 103

Claims 3-4 and 6-20 stand rejected under 35 U.S.C. § 103 as being unpatentable over Schmitt and MacCracken, R. and Joy, K. "Free-Form Deformations with Lattices of Arbitrary Topology." Proceedings of the 23rd Annual Conference on Computer Graphics and Interactive Techniques. Pp. 181-188. 1996 (hereinafter referred to as "MacCracken").

In response, Applicant appreciates the concerns raised by the Examiner, but respectfully submits that in light of the amendment to the claims as set forth above and the arguments presented herein, neither Schmitt nor MacCracken, either individually or collectively, render the claims of the present invention obvious.

Independent claims 1, 6, 10, 15, and 21 have been similarly amended to include the limitations described above under the arguments set forth under 35 U.S.C. § 102. As such, the arguments relating to these amendments are incorporated herein.

In addition, Schmitt discloses and teaches a method and system for modeling surfaces. Schmitt does not speak to or suggest modeling various objects having both surface elements interior elements or members enclosed by the outer members. Although the actual model may comprise a three-dimensional volume, the actual facets or planes making up that volume represent only surface objects or elements. That is, there is no mention in Schmitt about any interior members, such as various walls or other structural items that may be found in a building structure.

Moreover, as discussed and emphasized above, Schmitt discloses and teaches a method for utilizing *derived data points* as the initial starting place for creating the model upon being input into the surface-splitting system. This teaching is contrary to that in the

present invention wherein only a default, non-derivational polyhedron is used to begin the modeling process.

Still further, Schmitt teaches away from the claims of the present invention by providing a modeling process that is highly unadaptable to the present invention. Indeed, using the initial modeling steps described in Schmitt, one ordinarily skilled in the art would not think to utilize such a system on the building structures described in the present invention. Along the same lines as the argument set forth above that Schmitt requires a set of derived or given data points to initiate the surface-splitting process taught, the Applicant would also like to emphasize that the system and method taught in Schmitt is not feasibly or practically adaptable to create and manipulate a model of a building structure. Indeed, Schmitt begins by teaching that a plurality of data points must first be obtained, wherein these data points are derived from the object itself as obtained by a digitizing system. See Schmitt page 179. To model an actual building structure using the surface-splitting method and system taught in Schmitt, one would be required to obtain a plurality of data points directly from an actual building structure as this practice is specifically stated in the Schmitt reference as being required. The digitizing system suggested for use in Schmitt is not adaptable for such a practice. Indeed, such a practice would be more than cumbersome if it could be done at all. Therefore, as the feasibility of obtaining a plurality of data points to be input into the surface-splitting system taught in Schmitt, wherein the data points were obtained and derived from an actual building structure, is practically unworkable, Applicant submits that Schmitt would not be looked to by one of ordinary skill in the art to arrive at the teachings of the present invention.

MacCracken also does not render the claims of the present invention, as amended, obvious, either individually or combined with Schmitt. Although MacCracken teaches a free-form deformation technique that allows three-dimensional deformation lattices of arbitrary topology, neither MacCracken nor Schmitt teach an estimation polyhedron used specifically for estimation purposes. Applicant would like to emphasize to the Examiner that independent claims 1, 6, 10, 15, and 21 in the present invention and as amended recite the modeling of a particular estimation polyhedron combined with an estimation function to estimate assigned attributes in the model, not just a modeling function alone. Indeed, the particular method of creating the estimation polyhedron is not the sole crux or novel feature of the invention, but rather the modeling of a building structure combined with an assignment of various estimation attributes to each facet or plane making up the model, as well as allowing a user to identify one or more facets and generate an estimate of materials and other needed items for various projects to be completed in the actual building structure, wherein the estimates are based upon an estimation function executed by an integrated estimation software function that generates these estimates using the estimation polyhedron model and the assigned attributes. Each of these is specifically recited in the claims and supported in the specification. Applicant respectfully submits that such a reading of the claims must obviate the § 103 rejection based on Schmitt and/or MacCracken. There is nothing in either Schmitt or MacCracken to suggest the limitations of the claims, nor would one ordinarily skilled in the art look to either Schmitt or MacCracken to arrive at the claims of the present invention, particularly the limitations recited in each of independent claims 1, 6, 10, 15, and 21 as amended.

Claims 3-4, 5, 7-9, 11-14, and 16-20 have not been amended as these claims place further limitations on what is otherwise argued allowable subject matter. Therefore, Applicant respectfully submits that these claims also stand in a condition for allowance.

Based on the foregoing, Applicant submits that neither Schmitt nor MacCracken render the claims of the present invention obvious, particularly as amended to recite more specific and definite limitations. As such, Applicant respectfully requests that the claims of the application be reconsidered and that the rejection under § 103 be withdrawn.

CONCLUSION

Based on the foregoing amendments and arguments, Applicant respectfully submits that the deficiencies in the application have been corrected and that the proposed claims are neither anticipated nor rendered obvious by the prior art references cited by the Examiner. As such, Applicant believes that the claims are now in a condition for allowance, and action to that end is respectfully requested.

If any impediments to the allowance of this application for patent remain after the above amendments and remarks are entered, the Examiner is invited to initiate a telephone conference with the undersigned attorney of record.

DATED this 21 day of May, 2003.

Respectfully submitted,

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#682166 v1 - 03/24/03 PAT Response to OA